Tanta University	3rd year, Computer and Automatic Control Dept
Faculty of Engineering	Control Engineering course

Sheet 1

Sketch the Root Locus and determine the range of k for stability for the systems have the following open loop transfer functions:

I. $GH(s) = \frac{K}{s(s+1)(s+3)(s+4)}$

II. $GH(s) = \frac{k(s+1)}{s(s+3)(s+4)(s+6)}$

III. $GH(s) = \frac{k(s+2)(s+3)}{s(s+1)}$ (Find k at $t_s = 2.6\ sec$)

IV. $GH(s) = \frac{k(s+1)}{s(2s+1)(0.2s+1)}$

V. $GH(s) = \frac{k(s+1)}{s^2}$

VI. $GH(s) = \frac{k}{s(s+2)(s+5)}$

VII. $GH(s) = \frac{k}{s(1+0.5s)(1+0.2s)}$

VIII. $GH(s) = \frac{k}{s(s+6)(s+8)}$ (Find k at $\xi = 0.59$ and the corresponding t_s)

IX. $GH(s) = \frac{k(s+2)}{s^2(s+4)}$

X. $GH(s) = \frac{k(s-1)}{(s+1)^2}$